PREDICTORS OF WILLINGNESS TO PARTICIPATE IN PHYSICAL EDUCATION (PE) IN POLISH HIGH SCHOOLS

WYBRANE CZYNNIKI REZYGNACJI Z ZAJĘĆ WYCHOWANIA FIZYCZNEGO W POLSKICH SZKOŁACH ŚREDNICH

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ABSTRACT

Introduction. 14% of students in Polish High Schools declare unwillingness to participate in obligatory physical education. Above 50% of European pupils more than 15 years old do not take physical activity at all.

Aim. The aim of this study was to examine the opinions of High School students about participation in PE and the effects of this kind of activity on their self-esteem, BMI and health status.

Material and methods. 318 students 16-19 years old accepted the invitation and participated in the study. The average students' age was 17.9. The group filled in the original questionnaire on PE. After that, health information and self-esteem was obtained. Variables distribution was checked. Chi-square, Spearman test and logistic regression were used for data analysis. Answers response rate was 84.1%.

Results and conclusion. Men (20.65%) were significantly more willing to participate in PE than women (9.70%). Women over 18 years old more frequently (27.7%) rated their health as average, bad and very bad than women up to 18 years of age (14%). Multivariate logistic regression analysis (CI:95%) showed that self-assessed health status (SAH), attractiveness of PE, physical fitness level significantly ($p<0.05$) affect participation in PE, while the degree of difficulty of exercises and participants' BMI had a highly significant ($p<0.001$) impact on participation in PE. 77.8% of participants rated the assessment system as unfair. Individual predispositions should be taken into consideration. The study suggests that the studied phenomenon is multifactorial. Self esteem and health assessment influence participation in PE.

KEYWORDS: physical education, self esteem, health status assessment.

STRESZCZENIE

Wstęp. 14% uczniów w polskich szkołach średnich deklaruje niechęć do uczestniczenia w zajęciach wychowania fizycznego (WF). W Europie ponad 50% uczniów nie uczestniczy w zajęciach wychowania fizycznego w ogóle.

Cel. Celem badania było zebranie opinii na temat przyczyn rezygnacji z zajęć WF wśród uczniów polskich szkół średnich oraz ocena wpływu ich decyzji na poczucie pewności siebie, BMI i stan zdrowia.

Materiał i metody. 318 uczniów w wieku 16–19 lat wzięło udział w badaniu. Średni wiek uczniów wynosił 17,9 lat. Respondentów poproszono najpierw o wypełnienie kwestionariusza ankiety dotyczącej opinii na temat prowadzenia zajęć WF, przyczyn rezygnacji. Następnie uczniowie podali informacje dotyczące ich zdrowia i zachowań prozdrowotnych. Rozkład zmiennych został sprawdzony, a testy Chi-kw., Spearmana oraz regresja logistyczna zostały wykorzystane do analizy. Wskaźnik odpowiedzi response rate wyniósł 84,1%.

Wyniki i podsumowanie. Chłopcy istotnie chętniej (20,65%) brali udział w zajęciach WF niż dziewczęta (9,70%). Kobiety powyżej 18. roku życia częściej (27,7%) oceniały swój stan zdrowia jako średni, zły i bardzo zły niż dziewczęta do 18. roku życia (14%). Wieloczynnikowa analiza regresji logistycznej (CI: 95%) wykazała, że takie czynniki, jak ocena stanu zdrowia (SAH), atrakcyjność zajęć WF, poziom sprawności fizycznej istotnie ($p < 0,05$) wpływają na uczestnictwo w WF. Natomiast stopień trudności ćwiczeń i BMI respondentów były wysoce istotne ($p < 0,001$) i miały wpływ na uczestnictwo w zajęciach WF. 77,8% uczniów oceniło system oceny za nieuczciwy, a indywidualne predyspozycje powinny być brane pod uwagę. Wyniki badań sugerują, że badane zjawisko jest wieloczynnikowe. Poczucie własnej wartości i subiektywny stan zdrowia wpływają na decyzję o uczestnictwie w zajęciach WF.

SŁOWA KLUCZOWE: wychowanie fizyczne, samoocena, ocena stanu zdrowia.

Introduction

According to a recent definition formulated by Caspersen, Powell and Christenson, physical activity can be defined as any body movement triggered by the muscles, which causes any energy expenditure [1]. In the sixteenth century the effect of physical activity on the correct BMI (body mass index) and better health was of interest. Unfortunately, the rapid development of science, technology and transportation has revealed many negative health effects in children

and adolescents in recent years. These adverse health effects are primarily a significant unwillingness to undertake physical activity and a sedentary lifestyle. All these things lead to a number of serious adverse physiological changes in a young human body [2, 3, 4].

The international cross-sectional study involving 144 countries shows that 43 million children in the world are either overweight or obese and 92 million are at risk of being overweight. Prevalence of childhood overweight and obesity increased from 4.2% in 1990 to 6.7% in 2010. It is estimated that this trend will reach 9.1% in 2020 [5]. The mass PE resignation in Polish schools has been observed for several years. Increasingly, instead of active participation and development of the young man, a short and long term resignation from this kind of activities at schools has been reported. It is estimated that about 5.5 million people with physical activity reduced to a minimum needed about 3.1 million additional days of sick leave [6]. More than half of Europeans over 15 do not take physical activity in general. The National Institute for Health and Welfare in Finland indicates that about 10% of children aged 12 - 14 years reveal too low physical activity to maintain their normal development. One-third of young people between 16 and 18 years old exercise a little over 1.5 hours a week beyond school hours [7]. As a result of US studies analysis, a significant decrease in physical activity over the years has been found. Adults' activity ⩾ 3 METS decreased from 48% in 1960 to 20% in 2008, and the load was reduced from 2 to 2.9 METS. In contrast, the activity of less than 2 METS increased from 37% to 55% [8].

In the study of 1054 Warsaw's pupils aged 11 - 15 years, 30% of boys and 25% of girls spend more than 5 hours on activities that do not require physical activity, for example watching TV. Interestingly, 92.8% of boys and 91.7% of girls evaluated subjectively their degree of activity as high or average and only 15.6% of the researched group said that their activity was too small [9].

The impact of physical inactivity in children and youth on their health and adulthood has been considered over the last decade [10, 11, 12, 13]. Often, parents or teachers are respondents in studies. However, most of the reports have not shown the impact of several factors on reasons for PE exemption from the students perspective and their opinions on it. It is important to reflect on the causes of the studied phenomenon. Why do so many young Polish people resign from PE?

Methods

Study design

The written consent was sought from both the principal and the school director of each school before participants in 1 – 3 grade of high school classes were recruited. Then, information was sent to students' home and the participants were eligible to participate if they returned the parent's consent and child assent forms signed. The parents consent was required from students under 18 years of age.

The youth were also asked to complete the anonymous questionnaire about their opinion on the reasons for the exemption of healthy young people from Physical Education (PE) classes. The original questionnaire includes questions about the frequency of days of exempting, physical activity out of school and type of physical activity. Respondents were asked about team games, their frequency and whether they believed they were good at them. They were also asked about the variety of activities, what kind of sport they were interested in and if obesity/overweight could lead to PE resignation. The level of knowledge of the health consequences of overweight/obesity was examined.

Baseline sample

The sample for the baseline survey covered the students in the government schools in the southern Poland. Three schools comprising 22 school classes with various profiles were selected. 6 first grade classes, 7 second grade and 9 third grade (including 6 sciences classes and 3 humanistic classes) were selected. All students from 16 to 19 years old in the chosen school classes were selected for the study sample. 557 pupils were recruited for participation but only 318 pupils accepted the invitation and participated in the study.

Statistical analysis

The data were collected from September 2014 to September 2015. Analysis of the results was performed using the statistical package PQStat ver. 1.4.2.324. All variables will be checked for normality of distribution before analyses and transformations are applied where necessary. Test Chi^2 was used to compare the distributions of qualitative variables in sex groups. Spearman correlation was used for univariate analysis and multivariate logistic regression analysis (confidence interval 95%) was performed. In order to implement multivariate logistic regression analysis, the main dependent variables have been transformed into a dichotomous nominal scale and the independent variables into a dummy variables.

Exclusion criteria

To reduce disruption, middle school students and pupils in sports classes were excluded from the study. Students suffering from health problems that pre-

vent them to attend physical education throughout the year (medical certificates) were excluded from the study as well.

Results

Group characteristics

3 schools participated in the baseline survey and a response rate of 60%. Out of 557 pupils who were selected to participate in the survey, 318 were interviewed thereby a response rate of 57.1% (**Table 1**). Of the 239 nonparticipants, in 98 cases parents did not return a written consent for their children (below 18 years old) to participate and in 141 cases pupils (over 18 years old) did not want to participate.

Table 1. Response Rates

Parameter	Response
Number of schools sampled	5
Number of schools that participated	3
School response rate	60%
Number of pupils enrolled	557
Number of pupils participated	318
Pupil response rate	57.1%

Source: author's own analysis

A little more than half of the study (57.8%) group were men. The majority (54.08%) of the participants were in the age group above18, while 45.92% were in the age group up to 18 years. The mean value of the age was 17.6. All study participants had physical education classes twice a week according to the timetable.

Table 2. The whole group characteristics

Parameter	first grade of high school	second grade of high school	third grade of high school
sex: M	65	52	67
K	45	48	41
age [mean (SD)]	16.6 (0.8)	17.4 (0.6)	18.7 (0.4)
< 18 years old	110	36	0
⩾ 18 years old	0	64	108
the number of PE hours	2/week	2/week	2/week

Source: author's own analysis

Chi-square analysis revealed statistically significant correlation of the two components, that is self esteem and willingness to participate in PE classes in two sex groups. Significant differences in self-esteem among men and women were observed. Women have a lower self-esteem than men (**Table 3**). The effect of the statistical test between self-esteem and sex was weak (Fi = 0.11). The study showed a significant difference in willingness to participate in PE in men and women. Men (20.65%) were significantly more willing to participate in physical education classes than women (9.70%) (**Table 4**). The effect of the statistical test between willingness to participate in PE classes and sex was strong (Fi = 0.73).

Table 3. The relationship between self-esteem and sex

Self-esteem level	men		women		p
	n	%	n	%	
Low	40	21.67	86	64.39	
Average	55	29.71	29	21.61	p < 0.05
High	89	48.62	19	14.00	

Source: author's own analysis

Table 4. The relationship between willingness to participate in PE classes and sex

Willingness to participate in PE lessons	men		women		p
	n	%	n	%	
very willingly	38	20.65	13	9.70	
willingly	71	38.59	16	11.94	
average	54	29.34	56	41.79	p < 0.05
reluctantly	11	5.98	37	27.61	
very reluctantly	10	5.44	12	8.96	

Source: author's own analysis

The majority of men quite well assessed their health. As many as 86.3% of men up to 18 years of age and 80.2% over 18 years indicated a good or very good health (**Figure 1**). Interestingly, boys better assessed their health condition than girls. Noteworthy is the fact that girls often rated their health as average, bad and very bad (especially after 18 years). Most of the surveyed women assessed their health as good or very good. What is interesting, women over the age of 18 more frequently (27.7%) rated their health as average, bad and very bad than women up to 18 years of age (14%) (**Figure 2**).

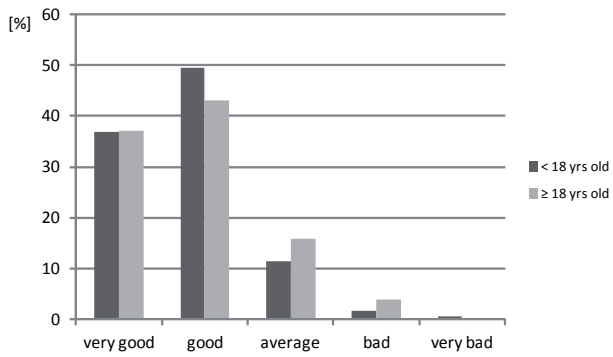

Figure 1. The relationship between the self-assessed health status (SAH) and age among men

Source: author's own analysis

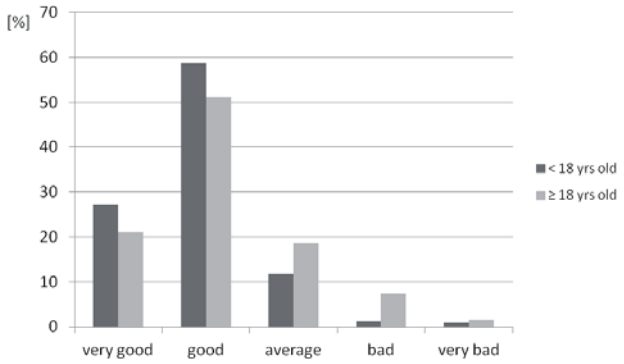

Figure 2. The relationship between the self-assessed health status (SAH) and age among women

Source: author's own analysis

Highly significant positive correlations were observed between participation in PE and the attractiveness of PE in both sex groups. Significant negative correlations were observed between participation in PE and a degree of difficulty of PE exercises in all participants. Involvement of the PE teacher level assessed by respondents was not related to participation in PE among men ($p = 0.082$) in contrast to women ($p < 0.05$) (**Table 5**).

Table 5. Spearman correlation coefficient with quantitative variables of the author's questionnaire on the opinion about PE

Corellation	Men			Women		
	n	*r*	*p*	n	*r*	*p*
willingness to participate in PE x involvement of PE teacher level	179	0.149	p = 0.082	126	0.366	p < 0.05
willingness to participate in PE x the attractiveness of PE	181	0.624	p < 0.01	134	0.661	p < 0.01
willingness to participate in PE x the degree of difficulty of exercises	184	-0.421	p < 0.05	134	-0.498	p < 0.05

Source: author's own analysis

Some aspects of health were taken into consideration. Significant positive correlations were observed between participation in PE, the physical fitness level ($p < 0.01$) and SAH ($p < 0.05$) of both men or in women. Significant negative correlations were observed between participation in PE and BMI in both groups ($p < 0.01$).

After examining simple associations, the data set was analyzed controlling for SAH, the attractiveness of PE, the degree of exercise difficulty and the physical fitness level. Results of the two logistic regression models are shown in **Table 7**.

Table 6. Spearman correlation coefficient with quantitative variables of the author's questionnaire on the self-esteem health status

Corellation	Men			Women		
	n	*r*	*p*	n	*r*	*p*
willingness to participate in PE x BMI participants	184	-0.482	p<0.01	130	-0.561	p < 0.01
willingness to participate in PE x physical fitness level	184	0.302	p < 0.01	134	0.417	p < 0.01
willingness to participate in PE x self-assessed health (SAH)	184	0.331	p < 0.05	133	0.429	p < 0.05

Source: author's own analysis

The willingness to participate in PE was significantly higher in men reporting good (OR: 1.88, 95% confidence interval (CI): 0.98 – 4.48) and average (OR: 1.26, 95% CI: 0.73–2.17) than in those who reported bad self-assessed health status. Women reporting high degree of exercise difficulty were highly significant (less than 87%) as compared with those in the low degree of exercise difficulty (OR: 0.13, 95% CI: 0.09–0.31). 86% of respondents said that physical education classes were not suitable for overweight and obese people in their school. This fact may be related to their participation in PE classes. Girls with obesity were less likely to participate in PE than those in the normal BMI group (OR: 0.11, 95% CI: 0.07 – 0.25). This predictor had a stronger impact on women compared to men. The age was not a significant predictor in men and women (**Table 7**).

Table 7. Factors associated with willingness to participate in PE in two sex groups 17–19 years old measured by logistic regression

Factors	Men			Women		
	OR	95% CI	p	OR	95%CI	p
Age:						
Young (<18y-old)	1.00			1.00		
Older (≥18y-old)	0.83	0.49 – 0.99	0.472	0.71	0.52 – 0.97	0.472
Self-assessed health status (SAH):						
Good	1.88	1.48 – 4.48	0.024	1.74	0.98 – 4.48	0.030
Average	1.26	1.13 – 2.17	0.014	1.58	0.73 – 2.17	0.022
Bad	1.00			1.00		
Attractiveness of PE:						
High	2.30	1.74 – 2.44	0.031	1.89	1.79 – 1.92	0.026
Average	1.23	1.12 – 1.56	0.027	1.24	1.18 – 1.43	0.028
Low	1.00			1.00		
The degree of difficulty of exercises						
High	0.16	0.10 – 0.22	<0.001	0.13	0.09 – 0.31	<0.015
Average	0.49	0.32 – 0.57	<0.001	0.56	0.44 – 0.67	<0.011
Low	1.00			1.00		
Physical fitness level						
High	3.99			3.86		
Average	1.44	2.87 – 4.81	0.003	0.82	2.69 – 4.92	0.013
Low	1.00	0.82 – 1.62	0.010	1.00	0.23 – 1.52	0.007
BMI						
Normal	1.00			1.00		
Overweight	0.42	0.13 – 0.48	<0.001	0.32	0.17 – 0.49	<0.001
Obese	0.27	0.16 – 0.37	<0.001	0.11	0.07 – 0.25	<0.001

Source: author's own analysis

The survey shows that 70.2% of girls in the study group said that the time of PE during the day had an impact on their participation in PE classes. Interestingly, only 31.4% of boys agree with girls. Due to the different abilities of pupils, we asked about the fairness of the assessment system and 77.8% participants rated the system as unfair. At the end we asked about the practice of physical activity outside school. We should be heartened by the fact that 48% girls and 71% boys said that they practiced outside school. The most common sports among high school students was a bicycle (80.7% of responses), swimming (49.8%), soccer (48.7%), running (42.1%) and yoga/zumba/fitness/gym (38.2%). However, it would be necessary to check how often they practiced those sports.

Discussion

PE classes at school have a significant impact on the health behavior of young people in their adulthood. Therefore, the importance of the interdisciplinary team in the early prevention of civilization diseases should be emphasized [14, 15, 16, 17].

Another study indicates that sedentary behavior which is separated from physical activity, is independently connected with metabolic health in adults and children [18, 19, 20]. It is important to know the causes of the negative attitude of young Polish people to physical activity at school. This study aimed to assess this issue by analyzing the association between physical inactivity at schools and several indicators which were easily applied. The present study shows that a significant number of respondents who do not participate in PE, practice some forms of sport outside school, even in the regular training form. Would it not be fair to consider a psychological factor associated with school environment? It seems that lack of special exercises prepared for pupils with overweight and obesity is one of the exemption reasons and it is associated with psychological factors, such as: self-assessed health status, mood, a sense of satisfaction, interpersonal and interpersonal relations (in school and home).

According to the Cracow study, 27.31% of Cracow boys and 16.09% of Cracow girls were overweight, while 7.78% of boys and 3.44% of girls suffered from obesity. The study showed differences between urban and rural boys and girls. The age group from the study was 6–13 years old [21]. One of the reasons of exemption from PE was students' obesity and being overweight as it is shown in presented study. The feeling of shame as a barrier to be active and both the shame of being less efficient than others and ridiculed can have much influence. It should be remembered that the problem is very complex. The students are overweight and obese because they do not train or they are less active due to being overweight/obese. It is connected with environmental and genetic factors, too. These data are completed by the literature on different health and psychological-related physical fitness gained at school.

It should be noted that controlled physical activity, which young people organize for themselves in their spare time is limited. In this case, mainly parents and guardians have an obligation to enforce of certain safety standards. It seems that the proper guidance of proceedings appears to be more dissemination of information, creation of educational programs in schools about the prevention of obesity, diabetes, cancer and cardiovascular diseases.

Some increase in physical activity is associated with health benefits. In children and adolescents, physical activity can reduce symptoms of depression and stress, improve cardiopulmonary functions, muscle fitness and bone health and reduce body fat levels, which are the main risk factors for the onset of metabolic diseases.

Outcomes from this study will help inform health professionals to make an impact on the deteriorating health condition of our children not only due to inappropriate behaviors of the closest environment but also schools' decisions related to the form and time of physical education. This research will facilitate larger scale studies, focusing on potential nations, ethnic differences,

Conclusions

Our results have significant implications for school authorities, the Ministry of Education and primary care services. The high proportion of participants connect their decision to participate in PE with time and kind of exercises. Most of them do not have a motivation to participate in PE at schools. The involvement of the PE teacher level, the degree of exercise difficulty and the physical activity level have highly significant influence on youth's participation in PE. Unfortunately, nonparticipation in High School PE is a multifactorial problem. Psychological factors, such as self-esteem or self-assessed health status (SAH) affected the decision of Polish High School students.

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